



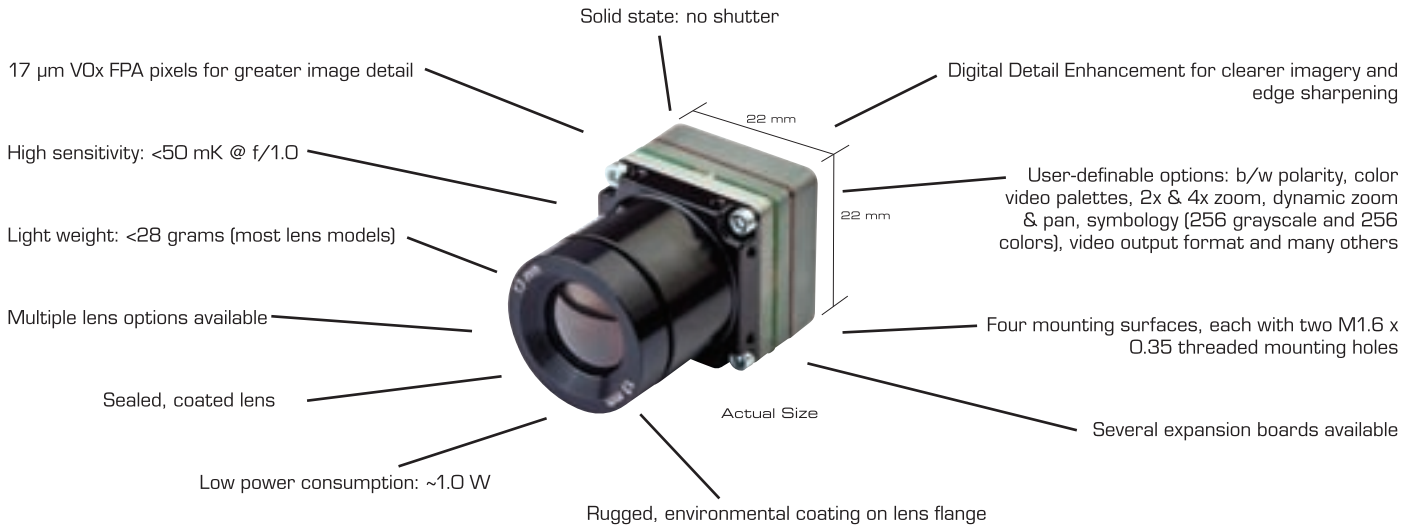
Quark

Longwave Infrared Thermal Core Camera

- Available in 336 x 256 and 640 x 512 resolution, both with 17-micron pixels
- Ultra-small volume and low mass enables new applications in smaller packages
- Low power consumption
- High shock and vibration tolerance
- 30/60 Hz field-switchable frame rates (Quark 336 only; Quark 640 in 2013)
- Common FLIR serial commands, GUI & SDK
- Affordable in large and small quantities

Quark: The World's Smallest Thermal Camera

Quark is the smallest and lightest fully-integrated uncooled camera in existence. It is designed for thermal imaging applications that require minimum volume and weight, yet Quark is rated for extreme shock and operating temperature environments. Several lens options are available for Quark, as well as a lens-less camera body for OEM customers.



See What Quark Sees



Digital Detail Enhancement Off



Digital Detail Enhancement On



IR Image with No Zoom



IR Image Showing 2x Zoom

Quark: Choose Your FOV

Lens Data

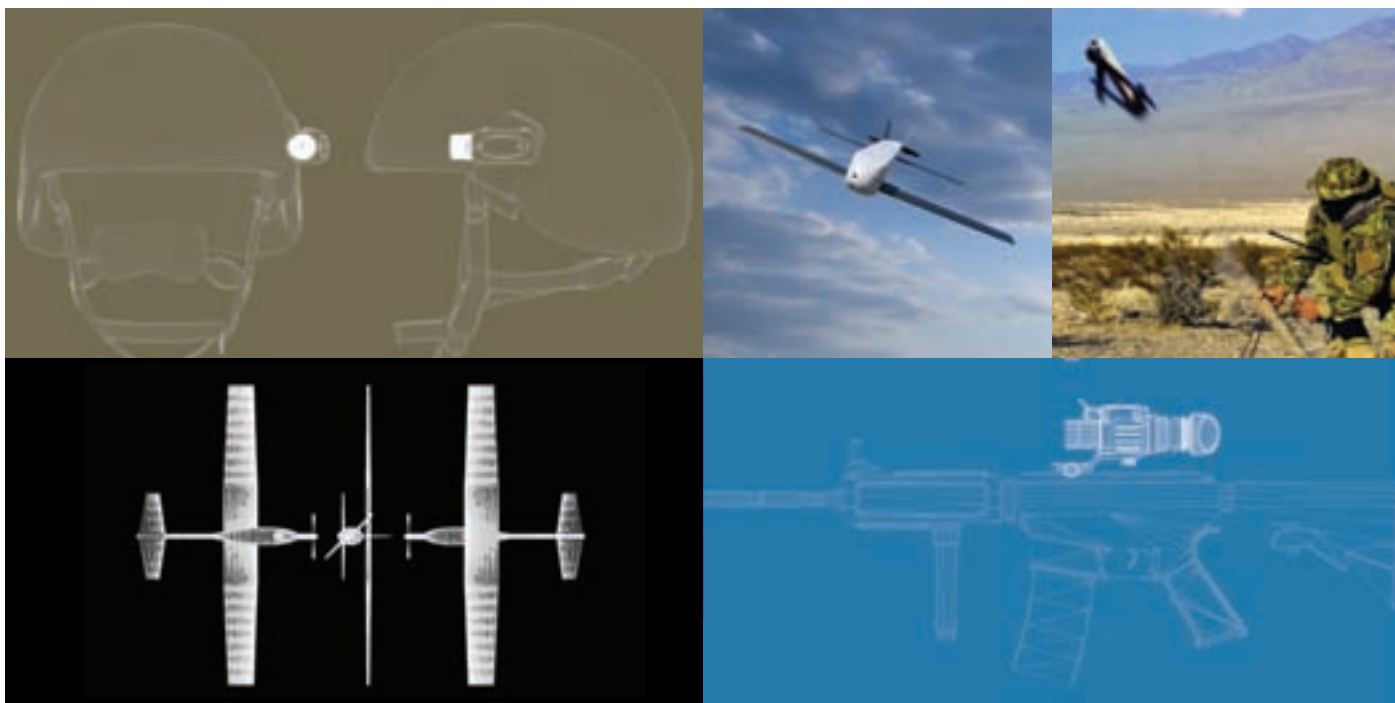


FOCAL LENGTH	13 mm	14 mm	17 mm	19 mm	35 mm
f/ number	1.25	1.25	1.25	1.25	1.5
Quark 640 FOV	45° x 37°	43° x 35°	36° x 29°	32° x 26°	18° x 14°
Quark 336 FOV	24° x 19°	23° x 18°	19° x 15°	16° x 13°	9.3° x 7.1°
IFOV (milliradians)	1.308	1.214	1.000	0.895	0.496
Min Focus	15 cm	20 cm	5 cm	30 cm	2 m
Weight (Lens & Mount Only)	15 g	13.5 g	15 g	15 g	20 g
Weight (Lens + Camera)	23 g	21.5 g	22.5 g	23 g	28 g
Diameter (max)	20.6 mm	20.6 mm	20.6 mm	20.6 mm	26.9 mm
Lens Coating	Diamond-like coated for superior abrasion resistance				

For DRI information, please visit www.FLIR.com/Quark

Macro Thermal Performance for Micro Payloads

Quark outputs 14-bit digital data in LVDS and CMOS formats, as well as 8-bit BT.656. With a simple expansion board accessory, the camera provides basic "power-in, video-out" capability using standard USB to generate a user-selectable NTSC or PAL analog video signal. Common camera controls are available in FLIR's free camera control software GUI - connected via USB - or a low-cost SDK.



Quark Specifications



SYSTEM OVERVIEW

System Type	Uncooled LWIR Thermal Imager
Quark 640:	640 x 512 VOx Microbolometer
Quark 336:	336 x 256 VOx Microbolometer
Pixel Size	17 µm
Spectral Band	7.5 - 13.5 µm
Performance	<50 mK @ f/1.0

OUTPUTS

Analog Video	Field-switchable between NTSC and PAL
Quark 640:	30 Hz (NTSC); 25 Hz (PAL); <9Hz option for export (factory set)
Quark 336:	30/60 Hz (NTSC); 25/50 Hz (PAL) ; <9Hz export option (factory set)
Digital Video	8- or 14-bit serial LVDS; 8- or 14-bit parallel CMOS; 8-bit BT.656

OPERATION & CONTROL

Image Control	Invert, revert, 2x & 4x digital zoom, polarity, false color or monochrome, AGC, digital detail enhancement (DDE)
Camera Control	Autonomous; Manual via GUI or serial command
Signal Interface	Connector for power, communication, video, digital data, external sync, discrete commands
Accessories	Video, Power & Communication (VPC) expansion board

PHYSICAL ATTRIBUTES

Size	22 x 22 x 12 mm (less lens)
Weight	8 g (camera body only)
Mounting Interface	8 attach points in lens mount, M1.6 x0.35 on 4 sides, 2 per side

POWER

Input Voltage	3.3 +/- 0.1 VDC
Power Dissipation	~1.0 W
Time to Image	~2 seconds

ENVIRONMENTAL

Operating Temperature Range	-40° C to +80° C external temp
Storage Temperature Range	-55° C to +105° C external temp
Scene Temp Range	To 150° C standard
Shock	800 g; 10 msec shock pulse (all axes)
Temperature Shock	5°/min
Vibration	100 g, 3 Hz continuous (all axes); 1000 g, 10 kHz for 10 msec (all axes)
Humidity	5 - 95% non-condensing
Operational Altitude	+12,200 km
EMC Radiation	FCC/CE Class B
ROHS, REACH, and WEEE	Compliant

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